



EROMED Project: “Definition of an integrated model for the predictive evaluation of the water erosion phenomena in the Mediterranean environment”

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The EROMED project titled “Definition of an integrated model for the predictive evaluation of the water erosion phenomena in the Mediterranean environment” was financed by the Italian Ministry of Universities and Scientific Research (MIUR) in order to identify and quantify water erosion process dynamics at hillslope and catchment scale in sensitive Mediterranean landscapes, as well as the impacts of climate and socio-economic changes. Two sample areas have been selected in central Italy (Orcia River catchment, Tuscany) and southern Italy (Imera Meridionale River catchment, Sicily), affected by intense water erosion and slope instability. Different direct and indirect erosion evaluation methods and a multidisciplinary approach have been applied. The main goal of achieving an integrated model for water erosion evaluation was reached by the: i) qualitative and quantitative identification of the main geomorphic processes; ii) direct measures of erosion rates and field geomorphological survey; iii) visible near infrared reflectance spectroscopy and chemical, physical and mineralogical characterization of bedrock sediments for assessment of soil degradation; iv) digital photogrammetric analysis to estimate long-term erosion rates; v) geomorphological hazard assessment using different geostatistical approaches; vi) Classification and Regression Tree (CART) Analysis to predict the spatial distribution of classified erosion processes; vii) estimation of the spatial distribution of the mean erosion rate by the application of an empirical approach; viii) the evaluation of the direct economic damage in agricultural areas caused by erosion processes.

In this work we illustrate the project activity and some selected preliminary results, aimed at the delineation of a process-based semi-quantitative integrated approach to assess the erosion dynamics.